Photoshop
For School Publications
Part 1: The Basics

by Bob Esler
resler@charter.net

This handout will cover:

1. Why use digital images?
2. Key terms and concepts
3. Hardware and software needed for digital imaging
4. How to use a digital camera
5. How to store and retrieve digital images
6. How to prepare images for publication

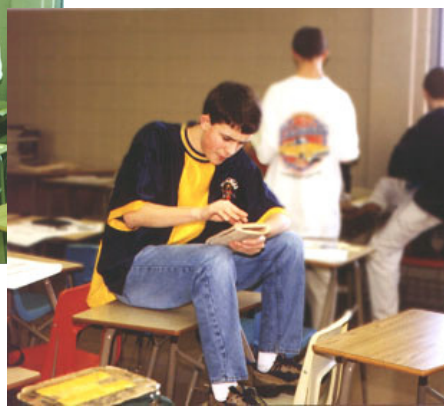
Why use digital images in your publication?

- Digital images are available immediately. There is no wait for film processing.
- Digital images can be viewed just after they are taken on the camera's LCD screen. You can shoot until you get the image you want.
- Digital images are often of better quality than those taken with typical film cameras.
- Creative elements and special effects can be added to digital images with Photoshop.
- Digital images can be placed into the page layout and precisely cropped.
- You will save money since there is no more film and processing costs.
- Students will gain valuable new skills.

Wings, Arrowhead Christian Academy, California, USA

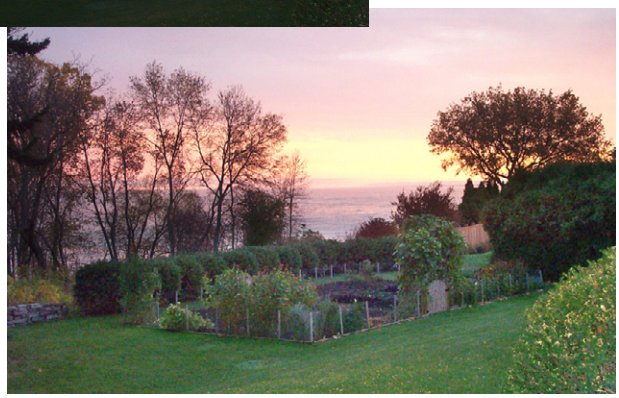
Prepared for the
JEA/NSPA Spring Convention
San Francisco, April, 2006

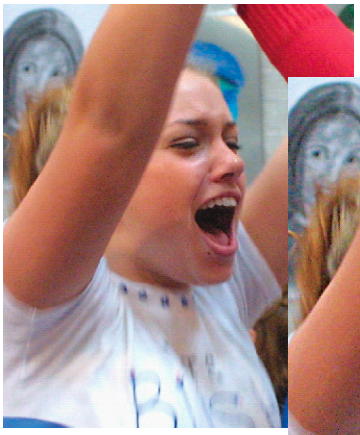
To Improve Quality:

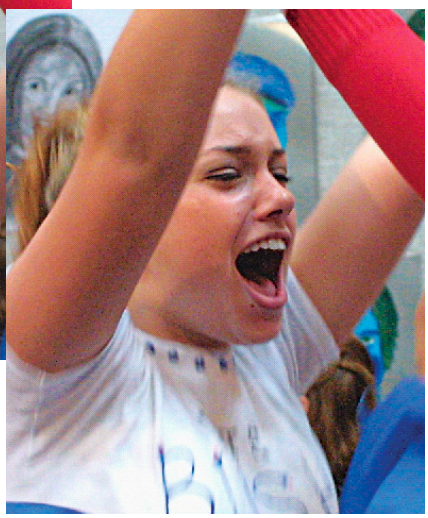


Color Correction:
Off-color images can be adjusted to have natural colors.

Retouching:
Dark areas in a photo can be selectively lightened. Here, the foreground was lightened without washing out the sky.

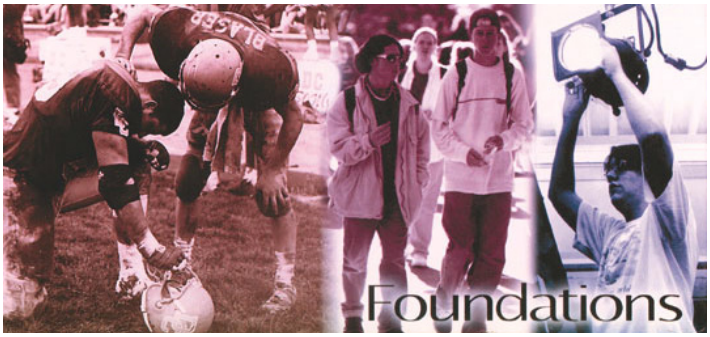




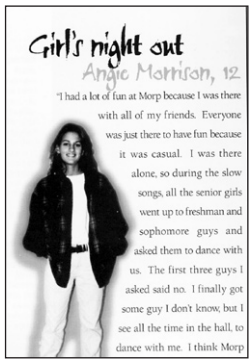


Sharpen:
All or part of an image can be sharpened.

For Special Effects:



Duotones, feathered edges, white shadow behind the title.


Girl's night out
Angie Morrison, 12
"I had a lot of fun at Morp because I was there with all of my friends. Everyone was just there to have fun because it was casual. I was there alone, so during the slow songs, all the senior girls went up to freshman and sophomore guys and asked them to dance with us. The first three guys I asked said no. I finally got some guy I don't know, but I see all the time in the hall, to dance with me. I think Morp

An effective use of cut out backgrounds and text wrap.

The background image is pasted into the text, and a drop shadow added.

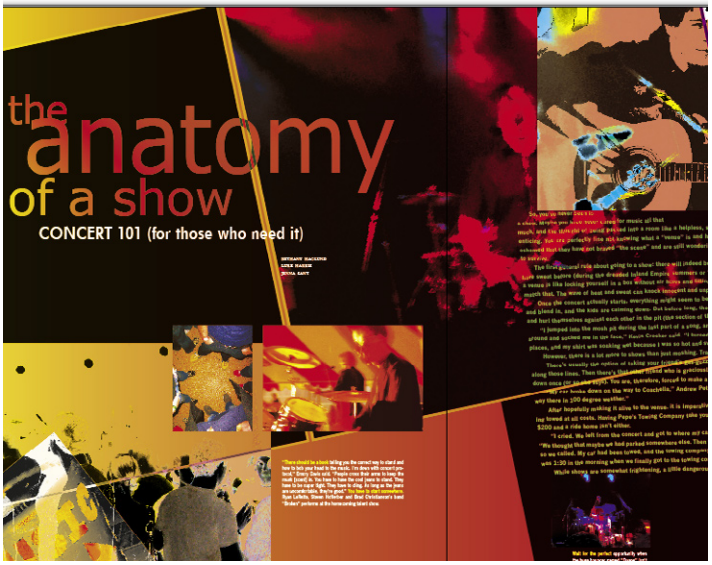
A motion blur was applied to the background.

Each letter is semi-transparent

The smaller image is semi-transparent

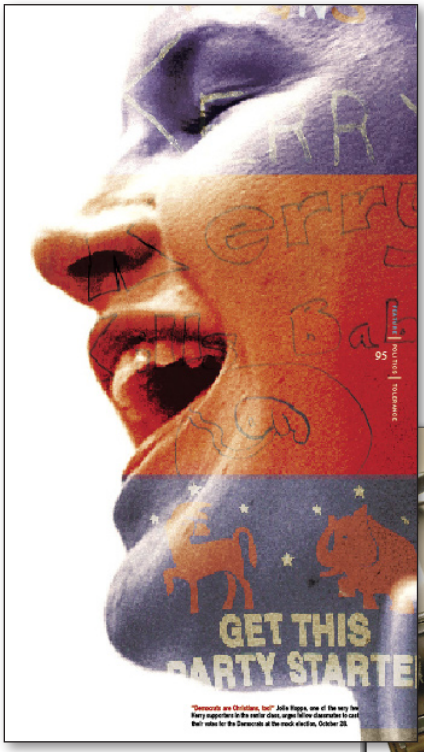
Why Use Digital Images?

For Special Effects:



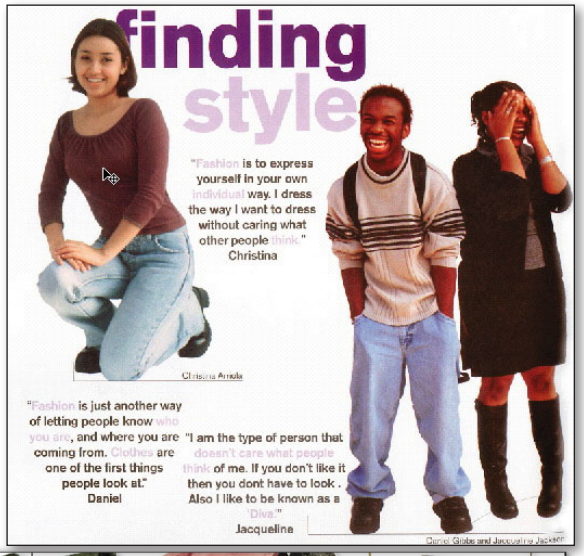
Different blending modes and a gradient overlay make this spread an eye-catcher.

The image of the girl is grayscale except for her eye. The color image pasted over part of the background is semi-transparent.



The face of the girl is on top of the three color images and in "Hard Light" blend mode.

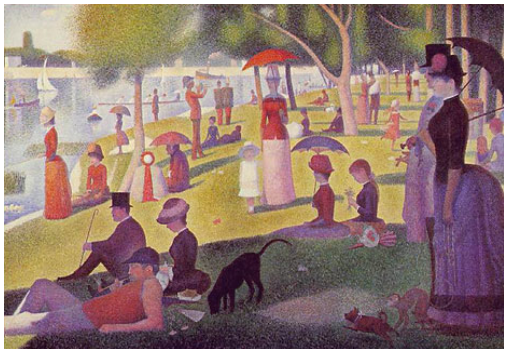
Freehand crop and feathered edges (left), and more effective cut out backgrounds (right).

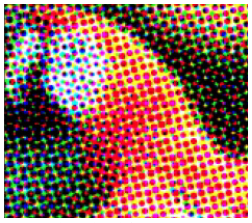

finding style
"Fashion is to express yourself in your own individual way. I dress the way I want to dress without caring what other people think."
Christina
"Fashion is just another way of letting people know who you are, and where you are coming from. Clothes are one of the first things people look at."
Daniel
"I am the type of person that doesn't care what people think of me. If you don't like it then you dont have to look. Also I like to be known as a 'Diva'."
Jacqueline

Cut out backgrounds, drop shadows and semi-transparent green splotches make for a great fashions spread.

Thanks to Kathryn Quanstrom (student designer) and the staff of *Wings* yearbook, Arrowhead Christian Academy, Redlands, California, for permission to use the four major images on this page.

Pixel





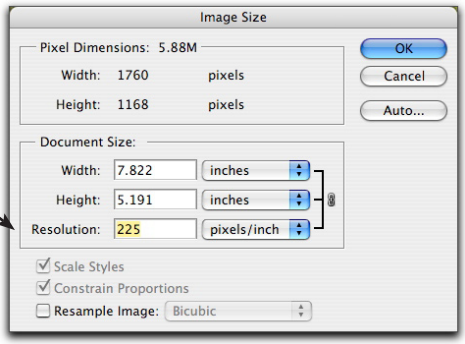
A color halftone is composed of color dots of different thicknesses. Digital images are composed of square pixels.

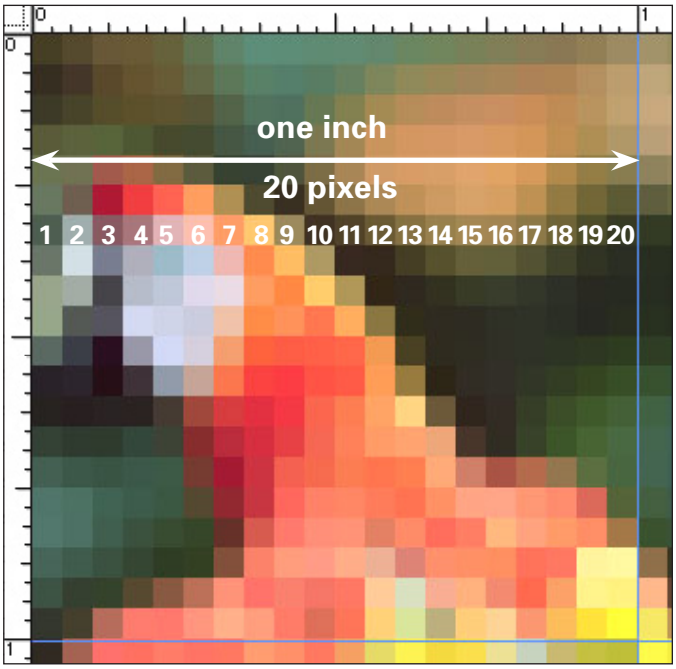
A pixel (short for "picture element") is the smallest unit of brightness and color in a digital image. Pixels are created by very small sensors in digital cameras and scanners that measure light as an electrical charge then convert the charge to a tone or color. Each square pixel has just one color or tone. Arranged in a grid pattern, the pixels are small enough so the eye fails to resolve each one, instead seeing a smooth image. The same technique was used by French impressionist Georges Seurat as he applied small dots of paint to canvas (pointillism). Up close, the dots are clearly visible, but step back and they merge into a complete picture. Halftone printing uses a similar technique. Printers can simulate subtle shades of gray by using only black ink on white paper. The trick is to vary the size of tiny black dots in a grid pattern. The thicker the dot, the darker the shade of gray appears when viewed from a normal distance. Color halftones use the same technique with four primary ink colors. So, digital imaging is just the latest version of the technique pioneered by Seurat in the 1880s.

Resolution

- Resolution is measured in pixels per linear inch (ppi).
- The higher the resolution, the better the photo quality–up to a point.
- Resolution guide:
  - Yearbook photos: 225 ppi
  - Newspaper (on newsprint): 130 ppi
  - Internet: 72 ppi (the resolution of a monitor)
- Images with resolutions greater than those listed above will not have noticeably improved quality, just larger file sizes.
- Pixilation will occur in images with resolutions less than those listed above.

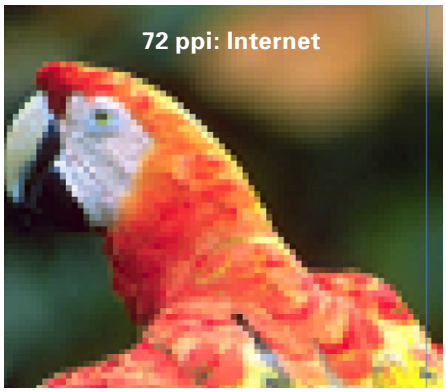
- In Photoshop, find resolution in **Image menu > Image Size**

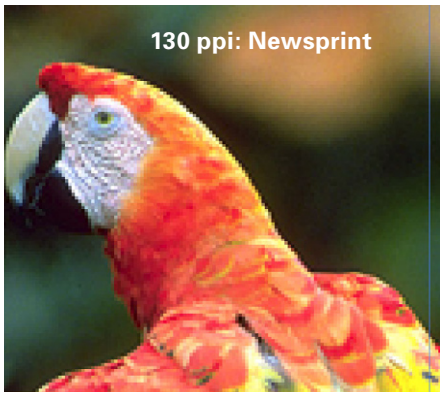




In this enlarged segment of the parrot, the resolution is set to 20 pixels per inch

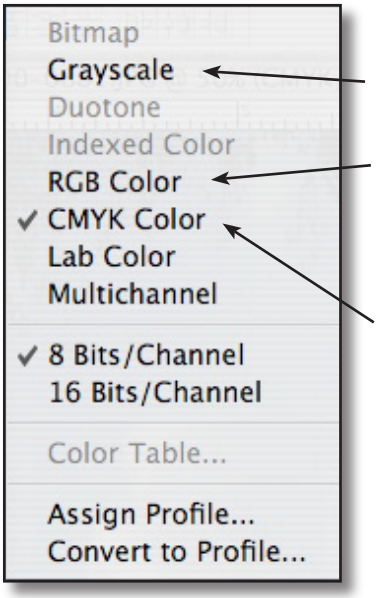
Recommended resolutions: (photos enlarged 5x)





Important Terms and Concepts

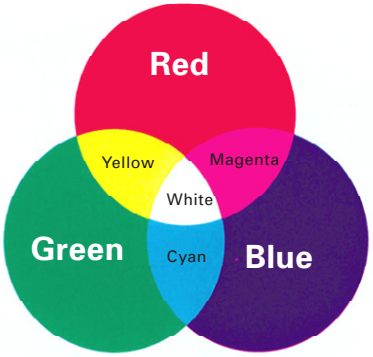
Mode (in the Image Menu in Photoshop)



Use **Grayscale** for black and white photos

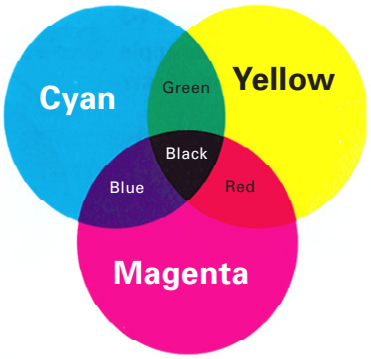
Scanned and digital camera images open in **RGB Color**. Work on images in this mode . . .

. . . but change to **CMYK Color** before saving. All images placed in a publication must be in CMYK mode.



RGB

Red-Green-Blue
The primary colors of light create images on computer screens. 100% of Red, Green, and Blue light create pure white. Mixing two primary colors create Cyan, Magenta and Yellow.



CMYK

Cyan-Magenta-Yellow-Black
To print color on a page, three primary ink colors are used. 100% of Cyan, Magenta, and Yellow ink create black. Printers add black ink to the mix to make it easier to create pure black and to bring out shadows. Mixing two primary inks create Red, Green and Blue.

File Format (Choose this in the Save dialog box in Photoshop)

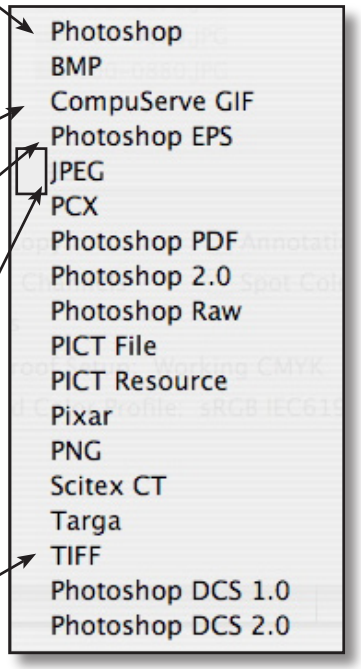
Save all images in the **Photoshop** format initially. This format preserves all layers and image data. Store this version in case you need to modify it later. This has a "psd" file extension.

Use **GIF** at 72 dpi for web graphics (not photos).

Use **Photoshop EPS** format for duotones on B/W pages or images with clipping paths. The file size will be large.

Use **JPEG** (Level 10 quality) for all grayscale and most color images that will be placed in publications. File size is compact and quality is good. Use JPEG at 72 dpi for web photos.

TIFF format can also be used, but file size is 6 times larger than JPEG/10 without any noticeable improvement in quality.



File Size

(In Photoshop, find this in the Image Menu > Image Size)
Keep files as small as possible. File size is affected by image size, resolution, mode, and file format as follows:

Image size: for the same 225 dpi grayscale image in Photoshop format:
4 by 5 in = 950K
8 by 10 in = 3800K, 4X larger

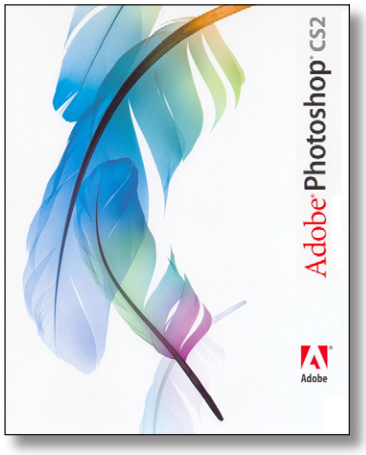
Resolution: for the same 4 by 5 in (10 by 12.5 cm) grayscale image in Photoshop format:
72 dpi= 106K
200 dpi= 950K, nine times larger

Mode: for the same 4 by 5 in (10 by 12.5 cm) image in Photoshop format:
grayscale = 950K
RGB color = 2850K, three times larger
CMYK color = 3800K, four times larger

File format: the same CMYK, 4 by 5 in, 225 dpi image saved in the following formats:
JPEG (Level 10) = 640K
Photoshop = 3500K, 5.5 times larger
TIFF = 3800K, 5.9 times larger

Equipment needed for Digital Imaging

Photoshop

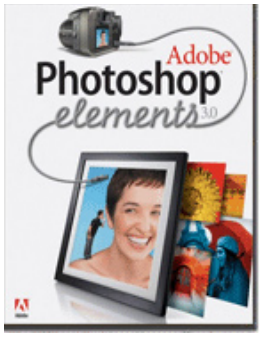


The industry standard for image editing, **Adobe Photoshop**, is now in version CS2 (or version 9 had Adobe not changed the naming system when it introduced the Creative Suite concept). CS2 was released in May, 2005, and is a relatively minor upgrade from version CS. There are a few nice additions that high school journalists can use, but nothing in the "must have" category.

The upgrade is a costly one, however. Not only must you pay Adobe about $550 for the full version or $150 for the upgrade from CS, but you must deal with the new "product activation" feature. After installing Photoshop CS2 and entering the multi-number code that comes with the install CD, you must contact Adobe via internet or phone to get a second set of numbers to install. Without this activation code, the software will cease to work after 30 days. And, one copy of the software will work on only one computer at a time. No more installing the same copy on your desktop computer and on your laptop. For schools, the licensing costs are about the same as for version CS. But for the average teacher, Adobe's new activation policy seems greedy to me.

My advice: if you have version CS, skip this upgrade. Wait and see if CS3 has any compelling new feature. If you have versions 6 or 7, upgrade only if you have the spare funds. Both older versions work just fine for most school publications.

For those on a limited budget (or, like me, mad at Adobe), there may be another option. **Photoshop Elements** is an easy-to-use Adobe product that does almost as much as Photoshop and costs about $70 for the full version. Currently, Photoshop Elements is in version 4 for Windows, version 3 for Macs.



The one key feature omitted from Photoshop Elements is the ability to generate CMYK mode images. This mode is essential for printing color images on printing presses. If you do not use color images, Photoshop Elements will work just fine. If you do use some color images, it is likely that your yearbook publisher offers something like Walsworth's "Image Placer" plug-in for InDesign. This plug-in automatically modifies a digital image to the proper resolution, JPEG file format and, importantly, to CMYK mode. The plug-in does not need Photoshop to work. So, you can modify and retouch an image in Photoshop Elements, then use "Image Placer" to make the crucial change to CMYK mode.

Hardware

Computer:

Photoshop must be run on a fast, powerful computer equipped with lots of RAM. Anything manufactured in the last two years should do. At least 512 MB of RAM is essential.

Monitor:

The typical 15-inch monitor does not provide much work space when using Photoshop. A better choice is a 17-inch or 19-inch monitor.

Storage:

Digital images are huge files, and thousands of images will be taken for a typical yearbook. Additional storage will be needed. Use a CD burner to copy images to a CD, and/or buy an add-on hard drive. A 120GB FireWire hard drive costs about $100.

Scanner:

Use a scanner to transform an existing photo into a digital image. Flatbed scanners cost less than $150 and make excellent digital images. Slide and negative scanners cost considerably more than flatbed scanners.

Card Reader: Make fast transfers of images from camera to computer with a card reader, a small box that hooks up to a computer's USB or Firewire port. Just take the memory card out of the camera, slip it into the card reader, and drag and drop the images onto the computer hard drive. Some new card readers have slots for each of the types of memory cards. Cost: $25 to $50.

Color Printer: Inexpensive ink-jet printers and nice to have, for proofing and for record-keeping. Epson, HP and Canon make good ones for less than $150. It's the ink that is expensive!

Equipment needed for Digital Imaging

Hardware

Digital Camera:

One or more digital cameras will be essential. Pay attention to the following when considering a camera for purchase:

1. Resolution. The more pixels a camera can create, the finer the image resolution. A "megapixel" is a million pixels. School newspapers will need at least 3 megapixels, while yearbooks will want at least 5. See the table below:

How big can the image be?

Image size in pixels	# of Mega-pixels	Max. image size for yearbooks @ 200 ppi	Max. image size for newspapers @ 130 ppi
2000 x 1500	**3**	**19x25cm** (7x10 in)	**30x38cm** (12x15 in)
2300 x 1800	**4**	**21x28cm** (8x11 in)	**35x45cm** (14x18 in)
2600 x 2000	**5**	**24x33cm** (9x13 in)	**38x50cm** (15x20 in)
3100 x 2100	**6**	**25x38cm** (10x15 in)	**40x60cm** (16x24 in)
3200 x 2200	**7**	**27x40cm** (11x16 in)	**43x63cm** (17x25 in)
3400 x 2500	**8**	**30x43cm** (12x17 in)	**48x65cm** (19x26 in)

2. Memory Card. Digital cameras store images internally on removable flash memory cards. The more megapixels a camera can create, the larger the memory card needs to be. Most cameras are sold with a low-capacity memory card, so the purchase of one or more large-capacity memory cards will be necessary. For a 5 megapixel camera, the memory card should have at least 256MB capacity. A card this size will store about 100 high-resolution images.

There are now at least eight different types of memory card in use by the camera manufacturers and none are interchangeable. Pay close attention to the type of memory card used by the camera you are planning to purchase, as it makes sense to have cameras that use the same type of memory card and buy several for the publications staff.

3. Zoom Lens. Most digital cameras have zoom lenses permanently attached to the camera body. Some SLR digital camera use the same interchangeable lenses used by film SLR cameras, with Canon and Nikon the most popular makes.

Cameras with attached zoom lenses range from the common "3X" optical zoom (35-105mm equivalent) to some models with 12X "ultra-zoom" (35-420mm) with image stabilization.

4. Size and Weight. Some cameras are very small and light, others bulky and heavy. Generally, the more complex and expensive, the larger and heavier. Digital cameras can be classified as follows:

Ultra-Compact: small, lightweight (120-200g), easy-to-use, attached 3X zoom lens, up to 7 megapixel resolution.

Compact: larger, heavier (250-400g), more features, attached 3X zoom lens, up to 7 megapixel resolution.

Large: larger and heavier (400-700g), much like SLR cameras but with permanently-attached lenses, 4X to 12X zooms. Cameras with 12X zooms usually come with Image Stabilization, a great feature.

Digital SLR: a digital version of the Single Lens Reflex film camera, accepts the full range of lenses made for film SLRs, full featured, 6-8 megapixel resolution, heavy- 500-700g without lens, 700-1000g with lens.

5. Other. Some cameras do a better job eliminating red eye than others. Some are very easy to use and some are very complex and feature-laden. Some seem to do a better job of making accurate images. The best web site to learn more about digital cameras, their features, pros and cons, is **dpreview.com**. The best site for current prices is **cnet.com**.

My Digital Camera Choices

(updated in April, 2006, within groups, listed by my preference based on price/performance)

Camera		Mega-pixels	Zoom Lens	Max ISO	LCD Size (in.)	View-finder	Cam Size W-H-D (mm)	Weight (grams)	Low Price ($US)
SLR Cameras									
Canon EOS Rebel XT		8	uses Canon EF	1600	1.8in	Opt	5.0 x 3.7 x 2.5 in	1.2 lb+lens	$ 677b+140L
Nikon D50		6	uses Nikon	1600	1.8	Opt	5.2 x 4.0 x 3.0	1.4 lb +lens	498b+100L
Olympus E-500 EVOLT		8	4/3 std mount	1600	2.5	Opt	5.1 x 3.7 x 2.6	1.1 lb +lens	539b+60L
Large Cameras									
Konica-Minolta A200	IS	8	7x- 28-200mm	800	1.8	Evf	4.5 x 3.2 x 4.5	1.1 lb	450
Panasonic Lumix DMC-FZ30	IS	8	12x- 35-420mm	400	2.0	Evf	5.3 x 3.4 x 5.4	1.6 lb	550
Sony CyberShot DSC-R1		10	5x- 24-140mm	3200	2.0	Evf	5.5 x 6.6 x 3.8	2.2 lb	775 new
Compact Cameras									
Canon PowerShot S3 IS	IS	6	12x- 36-432 mm	800	2.0	Evf	4.4 x 3.0 x 3.1	14.5 oz	499 new
Panasonic Lumix DMC-FZ7	IS	6	12x- 35-420mm	1600	2.5	Evf	4.4 x 2.8 x 3.1	11 oz	346
Canon PowerShot S80		8	4x- 28-100mm	400	2.5	Opt	4.1 x 2.2 x 1.5	9.4 oz	420
Ultra-Compact Cameras									
Casio Exlim EX-750		7	3x- 38-114 mm	400	2.5	Opt	3.5 x 2.3 x 0.9	4.5 oz	$274
Panasonic Lumix DMC-FX01	IS	6	3x- 28-102 mm	400	2.5	none	3.7 x 2.0 x 1.0	5.2 oz	310
Sony DSC-W70		7	3x- 38-114 mm	1000	2.5	Opt	3.5 x 2.2 x 0.9	5.5 oz	320
Canon SD-700 IS		6	4x- 35-140 mm	800	2.5	Opt	3.5 x 2.2 x 1.0	6.9 oz	499 new

IS = Image Stabilization

Opt = Optical
Evf= Electronic

The 8mp Canon Digital Rebel XT (350D) is a true SLR camera, able to use Canon EF lenses from Canon SLR film cameras.

The 8mp Panasonic Lumix DMC-FZ30 is as large as a SLR and weighs almost 740g but it has a 12X Leica zoom lens with Image Stabilization.

The compact 5 mp Panasonic Lumix DMC-FZ5 includes a 12x Leica zoom lens with Image Stabilization.

The ultra-compact, 7mp Casio Exlim EX-750 is about the size of a deck of cards, weighs only 127g, but has a 2.5 =inch LCD screen and an optical viewfinder.

Taking pictures with digital cameras

Digital cameras come in all sizes and shapes, and complexity. Some are simple "point and shoot" cameras, easy to operate. Others are extremely complex, with hundreds of possible settings. Most schools will want several different cameras of varying capability and complexity. My yearbook staff uses three types: a Canon Digital Rebel XT SLR camera with a variety of interchangeable Canon lenses, a Panasonic Lumix DMC-FZ20 with a fixed 12x Leica zoom lens and a tiny Casio Exlim EX-Z55. We use the Canon for sports action shots and low-light work. The Panasonic is a great all-around camera that works best with some light. It's 12x zoom lens is image stabilized, so close-in telephoto shots do not need a tripod. The Casio is about the size of a deck of cards and is a favorite with the staff for its small size and simple operation.

Using a digital camera:

Like film cameras, most digital cameras have a shutter release button, zoom lens control, flash controls and an optical viewfinder. There are additional unique controls for the digital camera:

- an LCD screen on the back of the camera which can be used to compose the picture, view control menus, and review the pictures just taken.
- a rotating selector dial with options like Review pictures, Program mode, Aperture and Shutter priority modes, and even Movie mode (brief videos limited in duration by the size of the flash memory in the cameras).
- a cursor wheel or dial on the back of the camera used for reviewing pictures and for setting control menus.

Issues unique to digital cameras:

1. Battery life is a big issue for digital cameras. It is limited, so take care to turn off the camera when not actually taking a picture. Try to minimize use of the LCD screen, as it is a power hog. Most camera come with rechargeable batteries.

2. There is usually a slight delay after pushing the shutter release and actual exposure. Most cameras have a two-stop shutter release-push down slightly to set the auto focus and power up the camera, push further to trigger the shutter.

3. The maximum ISO rating on most inexpensive and medium-priced cameras is 400, enough for taking most static indoor photos without a flash. More expensive cameras have maximum ISO ratings of up 800 or 1600, enough to freeze action indoors or on lighted sports fields at night without a flash.

4. Digital cameras are really mini-computers, so extra care in handling is a must. DO NOT DROP! Most do not come with sturdy leather cases, making matters worse.

Pay attention to resolution settings:

Most cameras allow several different image resolutions to be selected. My 5 megapixel Panasonic can be set to take images with resolutions from 640 x 480 pixels (.3 megapixel) to 2560x1920 pixels (4.9 megapixels). It also can save images in uncompressed TIFF format and two JPEG formats, high and low quality. High-end cameras also produce "Raw" images, with no modification to the image the camera produces.

For yearbooks, use the highest resolution and the high JPEG quality settings. Since the image files will be large, a high-capacity memory chip (512 MB or more) is essential.

For images taken for the internet, lower resolution and low JPEG quality will probably do just fine.

Using the flash:

Most cameras have several choices for the flash: always on, always off, auto (flashes when needed) and redeye (double flash to reduce redeye). The auto setting is the best to use unless a fill flash is needed outdoors in strong sunlight. Use "always on" for those situations.

Typical Controls

Zoom slider switch
Shutter release button
Control dial (P=Program, A=Aperture priority, S=Shutter priority, M= manual, Green arrow icon=review images)

Storing and retrieving digital photos

1. Choose a Photo Editor. This person can transfer photos from camera to hard drive, delete poor photos, prepare them for publication, oversee the storage system.

2. Create a folder called **Photo Storage**. This folder should be on the server or on one of the computers on the local network used by the publication. The folder should be available to all computers on the local network.

3. Inside this folder, create sub-folders for major categories: **Student Life, Sports, Clubs, Academics, People, Ads, Misc.** or a division that makes sense for your publication.

4. The Photo Editor (or Photographer) should transfer photos to a specific folder inside the Photo Storage folder as soon as "photo shoot" is finished. Erase the camera memory card after the photos are transferred.

5. The Photo Editor should quickly review each photo and discard any bad shots. Use a quick image viewer program like "Preview" in newer Macs or the File Browser in Photoshop.

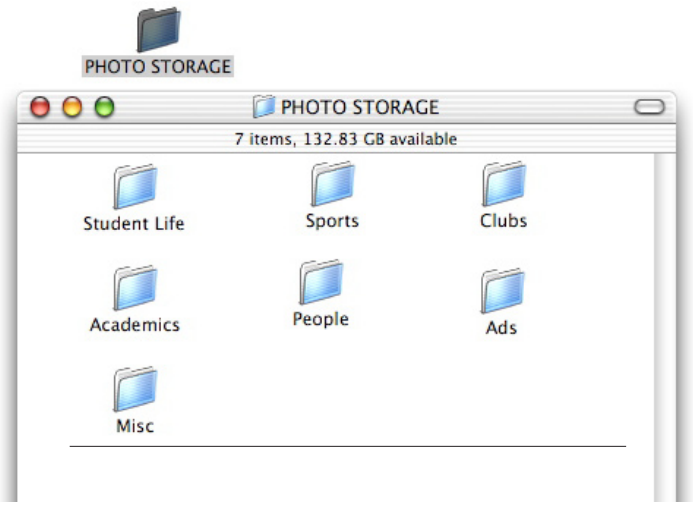
6. Digital cameras create distinctive labels for each image, usually a series of numbers. Rename the image with a label that contains information useful to page designers. One possible label style is shown to the right.

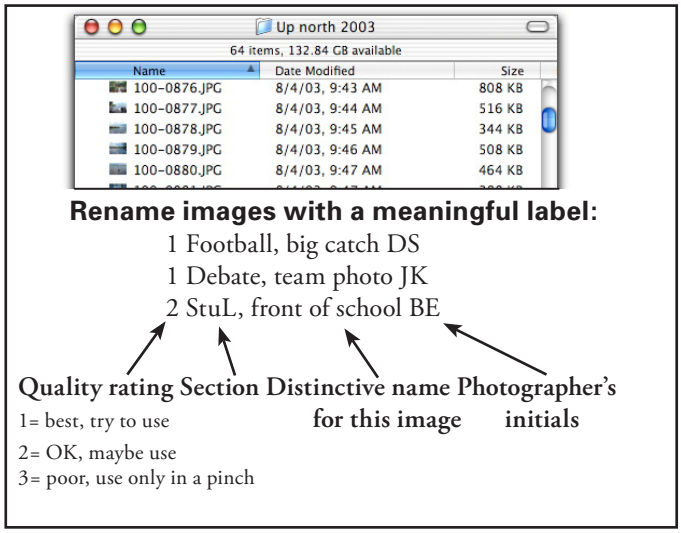
7. On a regular basis, the Photo Editor should review each photo and do basic prep for publication: Change resolution to 225 dpi, adjust Levels as needed, change mode to CMYK if color, sharpen if needed, and save in the Photoshop.psd format or in the TIFF format. Photoshop has features that automate this process, so each photo can be prepped in just a few seconds. If you save in the JPEG format at this point, choose a quality level of 10 (Maximum).

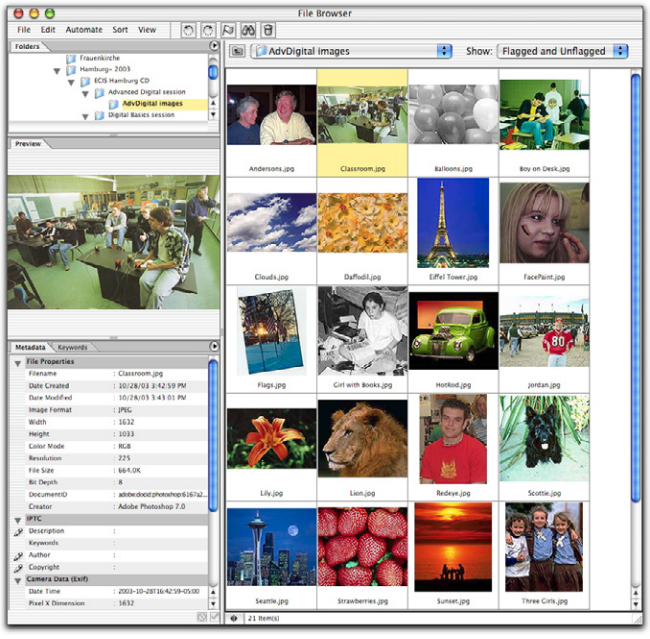
8. The modified and renamed photo should stay in the folder it was in, or be put into a more appropriate folder. Discard the raw image (with numbers for a name) or move it to the Photo Backup folder.

9. When a photo is used for a specific spread or story, the photo file with a distinctive name is moved from the Photo Storage folder into a folder for the spread or story. At this time, someone can make additional changes to the photo, such as retouching, color correction, redeye, cropping, etc. If the photo is to appear on a black and white page, change the mode to grayscale. Once all changes are made, the photo should be saved as a Level 10 JPEG. This image should be placed on a layout page.

10. The File Browser (CS) or Bridge (CS2) in Photoshop can be used to locate, sort and open individual images. A contact sheet can be made of all images in a file folder. For more on the File Browser and Bridge, see the next page.




Up north 2003
64 items, 132.84 GB available
Name
Date Modified
Size
100-0876.JPG 8/4/03, 9:43 AM 808 KB
100-0877.JPG 8/4/03, 9:44 AM 516 KB
100-0878.JPG 8/4/03, 9:45 AM 344 KB
100-0879.JPG 8/4/03, 9:46 AM 508 KB
100-0880.JPG 8/4/03, 9:47 AM 464 KB
Rename images with a meaningful label:
1 Football, big catch DS
1 Debate, team photo JK
2 StuL, front of school BE
Quality rating
1= best, try to use
2= OK, maybe use
3= poor, use only in a pinch
Section
Distinctive name for this image
Photographer's initials



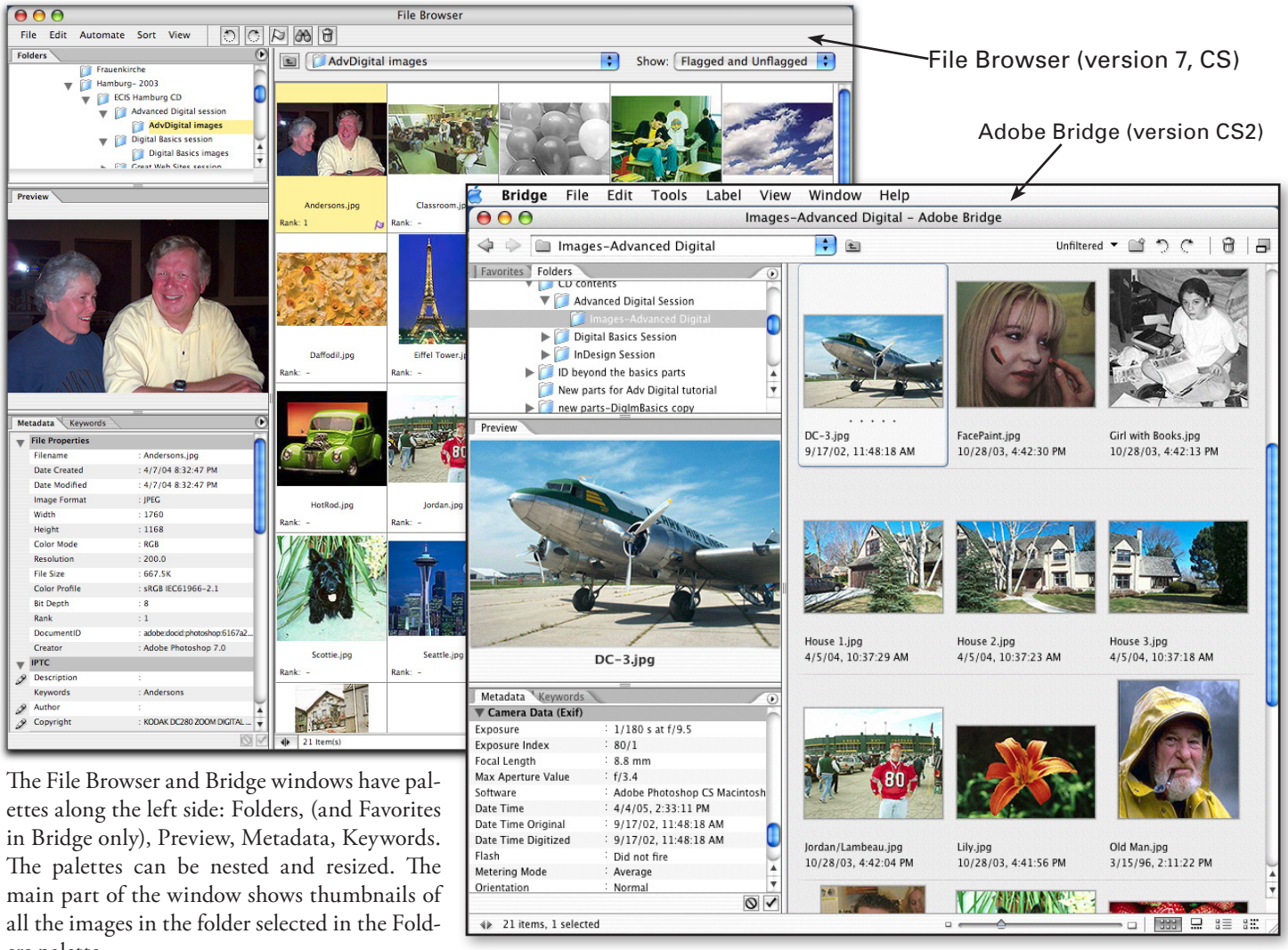
How to prepare images for publication

All raw digital images (from scanners and cameras) must be opened in Photoshop and prepared for publication. At the minimum, this means adjusting resolution, cropping, adjusting the levels, sharpening, setting the mode to grayscale or CMYK, and saving in the proper file format. This section covers all of this. The images used on the following pages can be found in the folder, Images-Doing Digital Properly, on the CD.

Use the Bridge or File Browser to find, sort images

The **File Browser** in Photoshop 7, CS and its replacement in CS2, **Adobe Bridge**, are handy tools for finding, previewing, sorting and labeling photos. Bridge is a separate, stand alone application that is opened from inside Photoshop. It works with all Adobe products in the Creative Suite, including InDesign CS2.

There are three ways to open the File Browser in CS:
File menu >Browse, or **Window menu > File Browser** or, click on the File browser icon in the Control palette at the top of the work area. Similarly, the two ways to open Adobe Bridge in CS2 are: **File menu > Browse**, or click on the Bridge icon in the Control palette at the top of the work area.



The File Browser and Bridge windows have palettes along the left side: Folders, (and Favorites in Bridge only), Preview, Metadata, Keywords. The palettes can be nested and resized. The main part of the window shows thumbnails of all the images in the folder selected in the Folders palette.

In the Folders palette, navigate through the folders on your hard drive to find a one to select. The images in a selected folder will be displayed as thumbnails on the right side of the Browser/Bridge window.

Drag the thumbnail images around to resort, or drag them to the Trash to discard. Assign a rating to the image in Bridge (one to five stars) or in File Browser (flag ones you like).

Click on a thumbnail to view it in the larger Preview palette. Double-click on a thumbnail to open it in Photoshop.

The Bridge has more features than the File Browser. It shows icons for text and other files. Thumbnails can be quickly enlarged or shrunk with the slider at the bottom of the window. Drag and drop thumbnails from the Bridge to an open InDesign, Illustrator or Photoshop document. Or use File > Place to send the image or other file to InDesign or Photoshop.

Click on the tiny icon at the top right corner of the Bridge to switch to compact mode which shrinks and simplifies the view.

Straighten a crooked scan

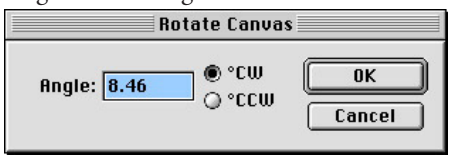
Method 1:

1. In Photoshop, open an image that needs to be straightened, **Flags** in this example.

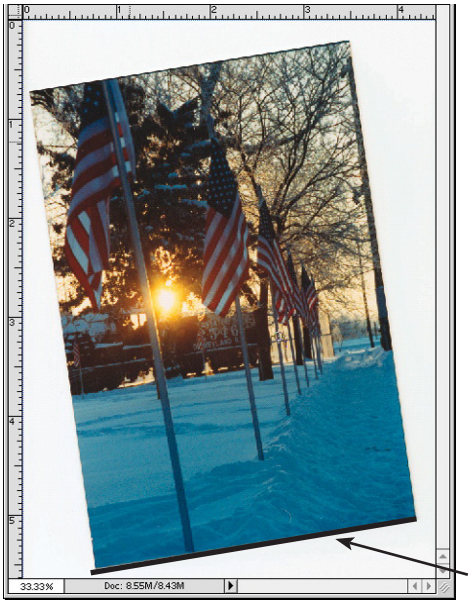
2. Choose the **Measure** tool in the Tool palette (it shares the space with the Eyedropper tool).

3. Drag the Measure tool along any edge of the image.

4. Image menu > **Rotate Canvas > Arbitrary**. The Rotate Canvas dialog box will open, and it will show the angle and direction needed to straighten the image.



5. Click **OK**. The image will now be straight.



Drag the Measure tool along any edge.

Method 2: (Version CS and CS2 only)

1. Scan a few images at one time as in the example on the right. Do not let the images touch each while on the scanner glass.
The image used in this example is titled, **3 pics**.

2. Open **File** menu and choose **Automate,** then **Crop and Straighten Photos**.

3. Photoshop will automatically straighten each image and then open each one in separate windows.

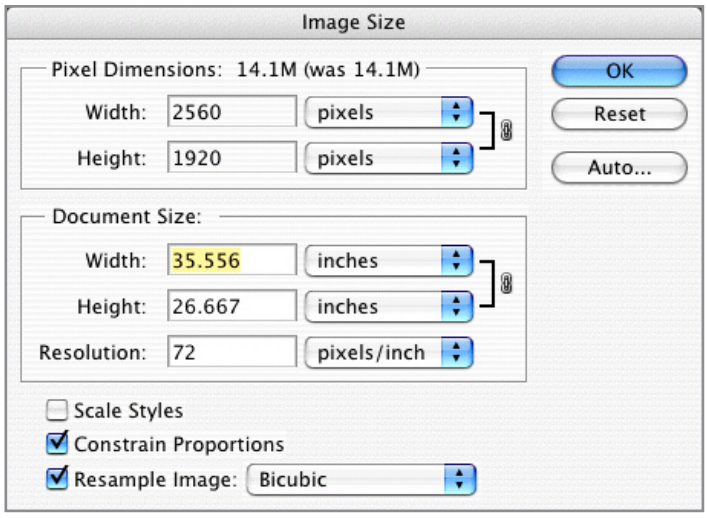
These three photos were scanned together. Photoshop CS and CS2 straightens and separates them in seconds.

Adjust the resolution and crop

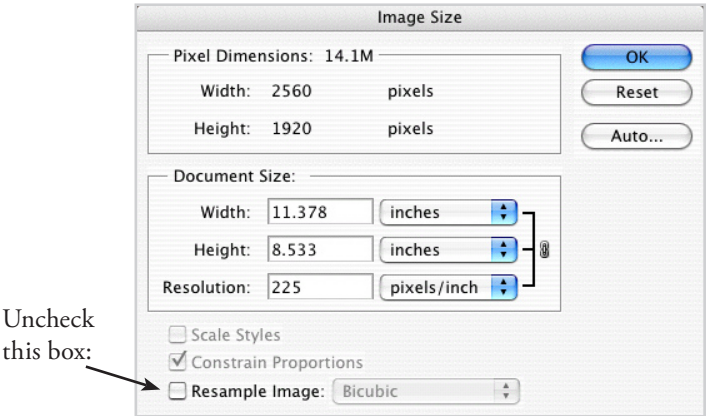
Most digital camera images have a native resolution of 72 dpi. The more pixels a camera can create, the larger the image. A five megapixel camera will generate an image with a size of about 35 by 26 inches at a resolution of 72 dpi. The resolution must be changed to about 130 dpi for newspapers or 225 dpi for yearbooks. Either adjustment will make the image size considerably smaller.

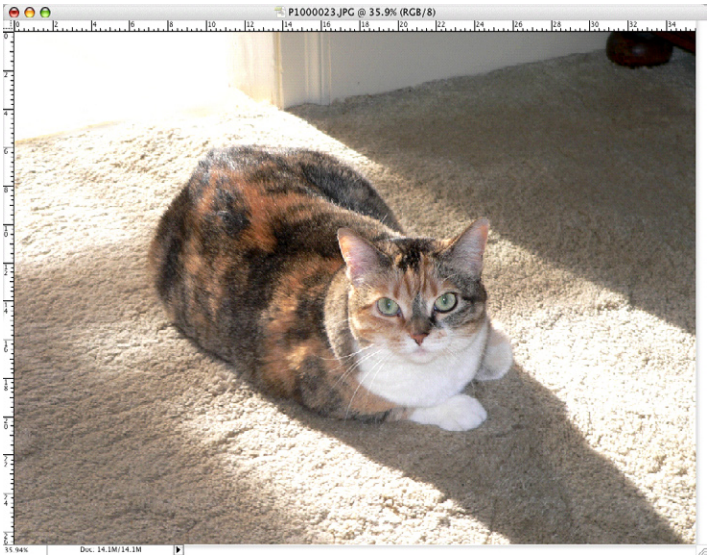
1. Open an image taken with a digital camera, **Cat** in this example.

2. Image menu > **Image Size**. The Image Size dialog box will open. The image size in pixels is 2560 by 1920 (about 5 million). At a resolution of 72 dpi., this makes an image over 35 by 26 inches. But, 72 dpi is far too low for yearbook quality.



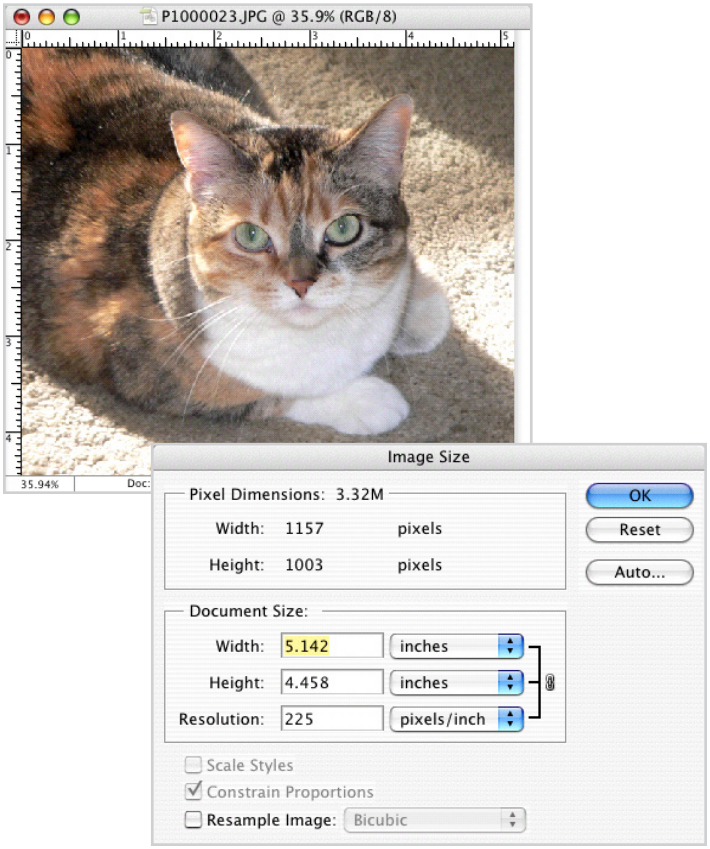
3. To make the image the proper 225 dpi, make sure the bottom item, **Resample Image,** is not checked. Then, change the **Resolution** to **225**. The width and height will adjust to 11.378 by 8.533 inches, the maximum size this photo can print at yearbook quality. Click **OK**.





4. To crop the image, use the **Crop** tool in the Tool palette. Drag the tool around the area to be retained. The area to be removed will be shaded. This area can be adjusted by dragging the corner boxes. When the crop area is correct, hit the **Return** key to make the crop.

After cropping, the remaining image is only about 5 by 4 inches. When placed on a yearbook page, this image cannot be enlarged more than about 10 percent without losing quality. So, what started out as a full-frame image of about 35 by 26 inches ends up being cropped to a 5 by 4 inch image for the yearbook.

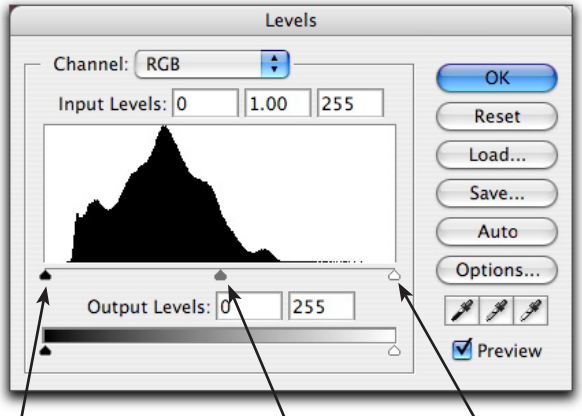


Set Levels

Levels must be adjusted on most images to assure a full range of tones from darkest to lightest.

1. Open an image, **FacePaint** in this example. This image is muddy and dull.

2. Image menu> **Adjust** > **Levels**. The Levels dialog box will appear. A graph (called a "histogram") in the center of the dialog box is made up of thin vertical bars. In grayscale images, each bar represents one of the 256 possible gray shades (or levels) that a pixel can have. Zero is pure black, 255 is pure white. The higher the bar, the more pixels in the image have that particular gray level. If there is no vertical bar at one or more levels, as in this example, it means that no pixel in this image has that particular gray level. For color images, the bars represent levels of bright and dark.



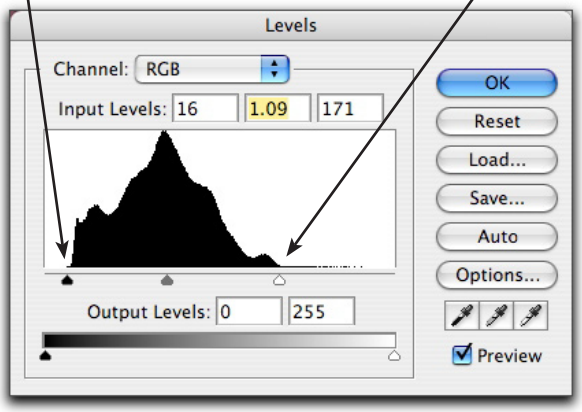
3. Adjust the **Input Level Sliders** as needed to make the photo look better:

- Slide the **Black point slider** to the right to just where the vertical bars on the graph begin.
- Slide the **White point slider** to the left to just where the vertical bars in the graph end. Each photo will be different and may or may not require one or both sliders to be moved.
- Move the **Midtone slider** to the right to lighten midtones or to the left to darken midtones. Grayscale images often need lighter midtones, color images may not need much midtone adjustment.

Black point slider
Drag to where the vertical bars begin.

Midtone slider

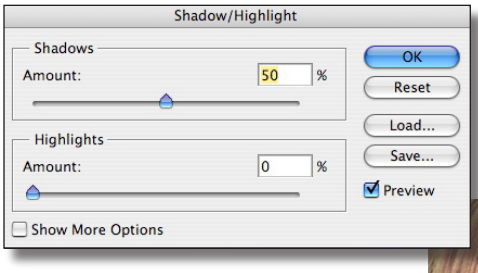
White point slider
Drag to where the vertical bars end.



4. Click **OK**. Once Levels have been set, do not go back and adjust them again.

Set shadows and highlights

Photoshop CS and CS2 have a new feature, the Shadow/Highlight command in the Image > Adjust menu. This command will bring out detail in the dark, shadow areas. It is especially effective on photos that have a bright background and a subject in the shadows- a photo that should have been taken with a fill flash, but wasn't. Even better, the default setting for this command seems to generate good results with regularity.



1. After adjusting Levels on the FacePaint photo, pull down the **Image** menu, choose **Adjust**, then **Shadow/Highlight**. The dialog box shown at the right will open.

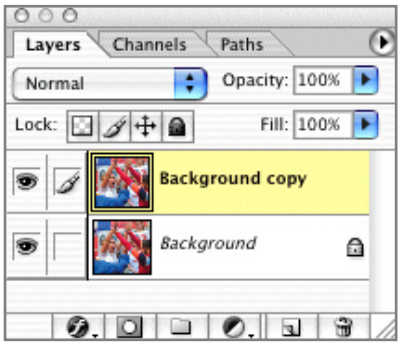
2. The default setting is shown. Move the **Shadows slider** to the left to darken the shadow areas, to the right to lighten. Move the **Highlights slider** to the right to darken highlights. Click on **Preview** to view adjustments as they are made, then OK when satisfied with the image adjustments.

Sharpen

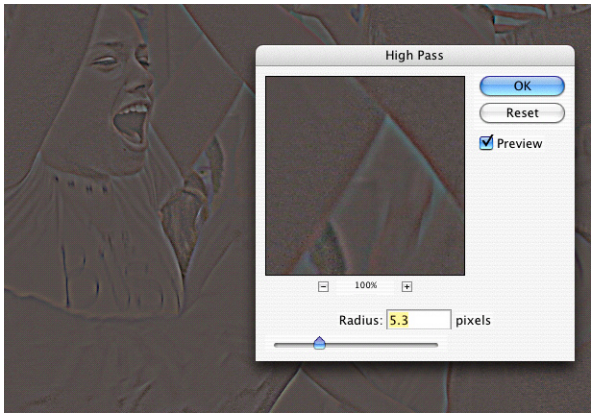
Most images need a little sharpening. Be careful not to overdo it. The most commonly-recommended way to sharpen is to use the "Unsharp Mask" filter. This works fine, but sharpens the entire image. Here is a method that works just as well, and gives you the option of sharpening just part of an image- a face or just the eyes, for example. It uses another filter, the **High Pass** filter, layers and the Overlay blend mode.

1. Open an image. **High Fives** was used in this example.

2. Duplicate the background layer (**Layer menu > Duplicate Layer**).



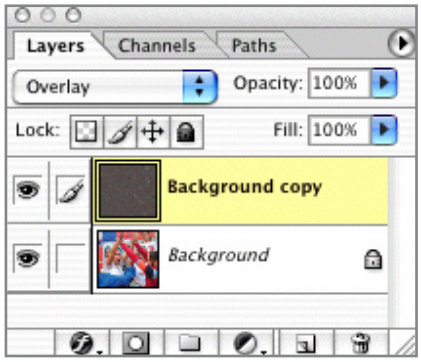
3. With the duplicate layer active, pull down the **Filter** menu, choose **Other**, then **High Pass**. The dialog box shown below will open.



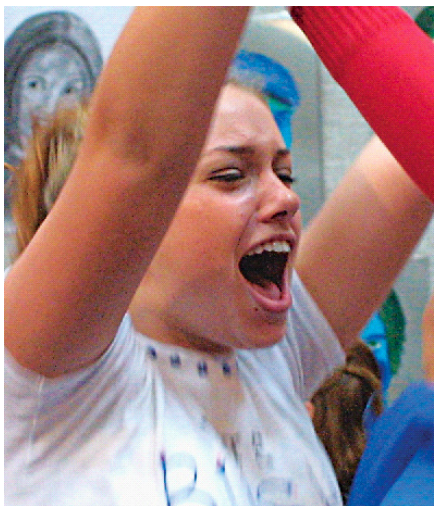
4. Click **Preview**. The image will have a dark gray mask over it. Move the **Radius slider** all the way left, then to the right little by little until the edges of the image start to appear. Typically, this will be when the Radius slider is about a quarter of the way from the left end. If a part of the image is what you want to sharpen, move the slider until the edges of that part start to show.

5. Click **OK**. Then, in the Layers palette, change the blend mode to **Overlay** for the duplicate layer. The image will reappear and will be sharper. To reduce the amount of sharpening, move the **Opacity slider** to a value less than 100%. To sharpen only part of the image, use the **Eraser** on the duplicate layer to "erase" the sharpening of the areas that you want to be like the original image's sharpness.

Change blend mode of the duplicate layer to Overlay



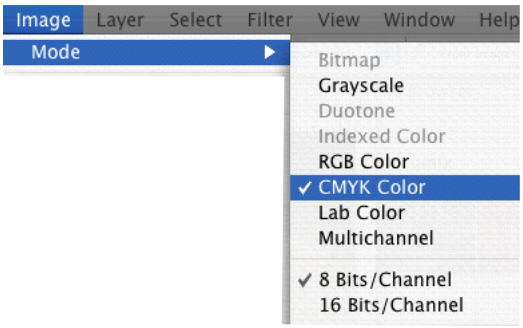
Before Sharpening **After Sharpening**



6. When you are happy with the sharpening, flatten the image (**Layer menu >Flatten Image**).

7. To make sharpening easier, make the steps listed here into an **Action**. Then, the sharpening can be done with one click on the Action's play button. To learn how to make Actions, refer to the Advanced Digital Imaging tutorial.

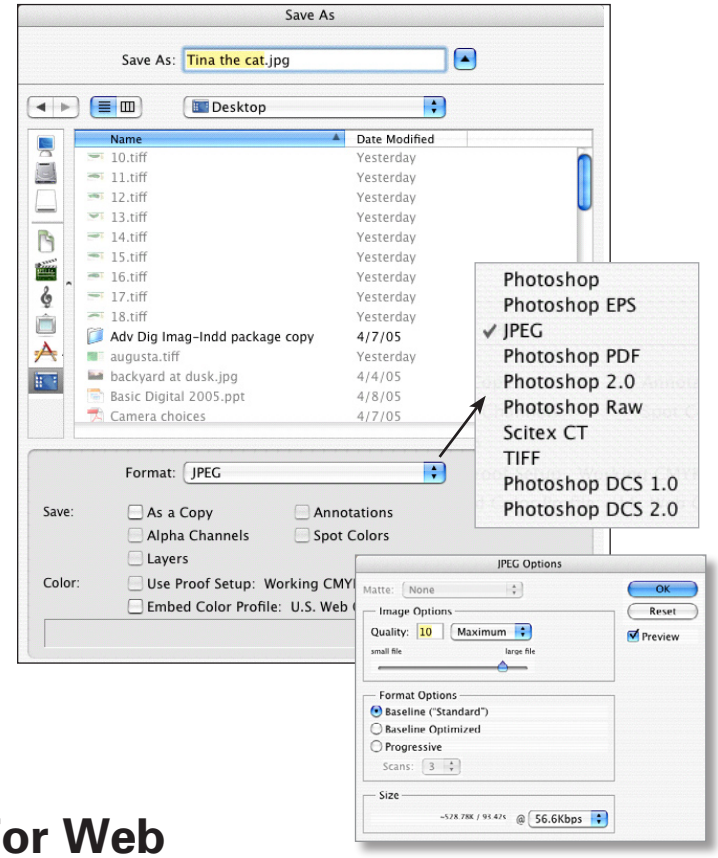
Choose the Mode



Black and white images should be in **Grayscale** mode. All color images must be changed to **CMYK** mode.

To set the Mode,
• **Image** > **Mode** > **Grayscale** for black and white images.
• **Image** > **Mode** > **CMYK** for color images (NOT RGB!).

Save in the proper file format



To save, **File** menu > **Save as**. Pull down the menu after "Format" in the middle of the dialog box to see the options.

The format used most often is **JPEG**, which compresses the image to save disk space. You can control how much detail is lost in the compression by controlling the **Quality** setting in the JPEG Options dialog box that opens automatically during the save process. Choose a quality of 8-10 for publications, and 3 - 6 for the internet.

It is a good idea to save two copies of any image that contains layers or is complex. The first copy should be in the Photoshop (psd) format (this saves the layers), the second in the JPEG format for use in the publication. Some page layout programs cannot import images in the Photoshop (psd) format.

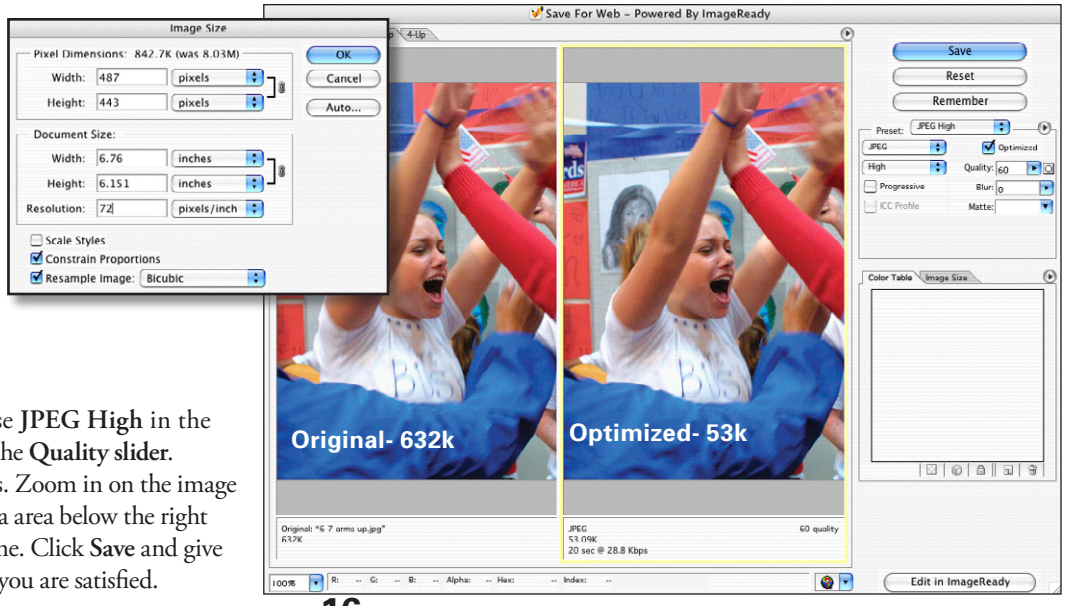
In some cases, other formats will be required by the printer:

Summary of Modes, File Formats

Image Type	Save in this Mode	File Format
Grayscale image	Grayscale	JPEG
Color image	CMYK	JPEG
Duotone on a spot color page	Duotone	Photoshop eps
Duotone on a 4-Color page	CMYK	JPEG
Image containing a clipping path	Grayscale or CMYK	Photoshop eps
Line Art	Grayscale	JPEG
Line Art	Bitmapped	TIFF

For Internet images, use Save For Web

If the image is to be placed in a web site, make sure to optimize it for quick web viewing. The **Save for Web** feature in Photoshop is essential for this job.



1. Set the image resolution to 72 dpi. To do this, pull down the Image menu and choose Image Size. Click the **Resample Image** box, then set Resolution to **72**. Click **OK**.

2. File menu > **Save for Web**. Choose **JPEG High** in the Preset area. To change quality, move the **Quality slider**. Better quality makes for larger file sizes. Zoom in on the image on the right to view the detail. The data area below the right image shows file size and download time. Click **Save** and give the internet version a new name when you are satisfied.